SHDR Revision Meeting : January 31, 2006

Meeting notes recorded by Duke Price, edited by Tom Joy

The first of a series of weekly meetings to achieve consensus on how the current prescriptive *Sewage Handling and Disposal Regulations* should be converted to performance-based regulations was held at 9:30 AM on Tuesday, January 31st, in the Monroe Building Room E. A total of 33 people including VDH personnel attended.

Next week's meeting will be held on Tuesday, February 7th in the Monroe Building, Room E. On February 14th, the meeting will be held in the Madison Building. On February 21st, the meeting will be held in the Monroe Building, Room D. No meeting will be held on March 7th due to the Decentralized Conference.

Don Alexander, Director of the Division of Onsite Sewage and Water Services (DOSWS) presented an overview of the regulatory revision process. The initial sessions will deal with performance-based regulations. Other major revisions will include operation and maintenance and a simplification of the existing regulations. He emphasized that DOSWS will not be controlling the meetings. The role of DOSWS personnel at the meetings will be to: 1) educate regarding concepts and possibilities, 2) contribute to discussions of the pros and cons of alternatives, and 3) listen.

Don emphasized that participants should not use the meetings as a forum for complaints, and should avoid becoming bogged down in details. Rather, they should: 1) recommend concepts 2) determine what the regulations should do, and 3) identify stakeholders and their roles.

After recommended concepts are reviewed by the Advisory Committee, DOSWS will write regulations that embody the concepts established. Verification of the draft regulations will be carried out in accordance with the Administrative Process Act, i.e., published, comment period, etc. The Board of Health is the ultimate decision-maker

Allen Knapp and Anish Jantrania presented the performance-based concept through the Charles City County project. Their presentation and Don Alexander's will be posted on the DOSWS website on the link to the meetings.

DISCUSSION: IMPLICATIONS OF PERFORMANCE-BASED REGULATIONS

- Question: How do we convince counties that a performance based regulation is needed? Should we provide options for localities that make scientific sense, and then let the County decide if the performance based regulation will work in their jurisdiction?
  The state should mandate the responsibilities and leave it up to the county to decide if a proposed solution will work on a particular project

DISCUSSION: RESPONSIBLE MANAGEMENT ENTITIES (RME)

- Question: Can VDH regulate the RME?
  Probably, yes, as public water utilities exist and are regulated. It's complicated as the State Corporation Commission is involved. DOSWS will grapple with this. For now, we'll assume VDH has the authority to do so.

- Question: Is it best to have a public, private, or combination RME?
  Public and private RMEs are satisfactory

- Comment: The regulations should be constructed so that there won't be an unfair advantage given to a stakeholder.
  Fairness is an issue and all income groups need to be considered. How the role of the RME is split is up to the county. RME needs to be financially secure with a concept of replacement. Data on utilities, RME standards, and problems needs to be presented. A service area should be defined.

- Comment: The Responsible Management Entity (RME) will be an important player in the reliability of the system/program.
  The regulation should be crafted so that systems will work over the long haul and not need frequent repairs to components. There must be reliable standards to assure long term success and that the program won't be exploited.

- Comment: This group should not regulate industry; we should move on and recommend something later when the concept is more developed.

- Comment: Economics is a factor and whether or not the owner can pay for the operation and maintenance (O-M); there has to be a guarantee of O-M whether if done through county or state.

DISCUSSION: PERFORMANCE-BASED VS. PRESCRIPTIVE REGULATIONS

- Question: Is there a line to be crossed between performance based and prescription?
  Prescription: It's fast, accurate, cheap, easy (FACE). Used daily and requires less thought in the design.
  Performance based: It incorporates prescriptive standards, but requires a PE design. PE assumes risk, and designs to minimize it. Follow-up (i.e., ongoing verification) is required. Done when it's harder to generalize wastewater characteristics;.

DISCUSSION: PERFORMANCE STANDARDS

- Question: What are some performance-based standards?
  30/30 BOD, TSS, etc. can be a performance-based example. VDH doesn't prescribe how one meets these standards.
  Another top level performance standard may be:
  - No adverse impacts
  - Few adverse impacts
  - Other

- Question: What should our top level performance standard be under which our performance-based regulations will be developed?
  It must be practical; therefore, it must include recognition that some environmental degradation is inevitable due to hard-to-remove pollutants commonly found in effluent., e.g., . PCP – pharmaceuticals, endocrine disrupters

- Comment: We don't want a technology-based standard – that's the Clean Water Act.

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TOP LEVEL PERFORMACE STANDARD

Treat wastewater so that the next user has the same benefit you did from their water

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- Comment: The Standard must:
  - Minimize discernable impact to the environment.
  - Protect public health: How do we measure this?
    If the public contacts the water returned to the environment, then the water must meet contact standards. If the public drinks the water returned to the environment, the water must meet drinking water standards.
  - Protect environmental health

DISCUSSION: RECEIVING ENVIRONMENT

This discussion dealt with how to define the receiving environment (i.e., the point at which the Top Level Performance Standard would have to be met).

- Question: Do we define a receiving environment in terms of:
  - Regulations
  - Site and soils
  - Distance from (NIMBY)

- Other?

- Comment: DEQ's anti-degradation policy was reviewed. 9VAC25-280-30

- Question: Where does the Receiving Environment begin- at the property line, surface water, soil interface??
  In New Jersey, it begins at the property line.
  In Charles City project, the end of the pipe was used.
  Designers may want to define project boundary and VDH establish performance standards.
  NOWRA recommended the end of the observed soil or the area evaluated; this is for design management zones.

Design Management Zone (DMZ) – validates our prescriptive regulations with a performance based standard using soils. It's analogous to what DEQ does in stream modeling. It's a hybrid regulation. We'll start with the standard and work backwards.

- Defined by lot. e.g. property line, edge of drainfield,
  - Defined by designer each time; it's the area evaluated.

- Water leaving the DMZ meets performance standard at boundary.

Single family homes: We'll simplify and stay prescriptive.

DISCUSSION: SYSTEM NEEDS – WHO IS ACCOUNTABLE?

All systems need:

1. routine monitoring – one or more of the following:
   a. inspection
   b. sampling
   c. testing
2. periodic maintenance
3. owner/responsible party
4. operation (user) requirements
5. reporting
6. Highly qualified professionals
   a. Design
   b. Siting
   c. Installation
   d. Etc.

RACI – government method to assure some one is accountable. Defined after Challenger accident. Defines roles.
Responsible
Accountable
Consulted
Informed

SHDR Revision Meeting: February 7, 2006

Meeting notes recorded by Duke Price, edited by Tom Joy

The second of a series of weekly meetings to achieve consensus on how the current prescriptive *Sewage Handling and Disposal Regulations* should be converted to performance-based regulations was held at 9:30 AM on Tuesday, February 7th, in the Monroe Building Room E.

Next week's meeting will be held on Tuesday, February 14th in the Madison Building, Room E, main lobby conference room. On February 21st, the meeting will be held in the Monroe Building, Room D. No meeting will be held on March 7th due to the Decentralized Conference.

Don Alexander, Director of the Division of Onsite Sewage and Water Services (DOSWS) explained that the purpose of the minutes is to let people know what we're doing. If there are glaring mistakes, let him know. Last week's minutes have been posted on our web site.

DISCUSSION: SYSTEM NEEDS/CORE DIAGRAM

Don presented a review of system needs and a "core diagram" (which has been posted to the DOSWS website) to demonstrate his concept of the way system needs are related. The consensus of the group was that we could use the diagram as an outline.

- What does every system need?
  1. Routine inspection
  2. Periodic maintenance
  3. Owner/Responsible party
  4. Operating requirements
  5. Reporting
  6. Qualified professionals for:
     a. Design
     b. Siting
     c. Installation

- Comments:
  We should add to the owner box to include information to show that the owner may be unaware of the limitations of the system.
  The owner may also be the person taking responsibility (i.e., the Responsible Management Entity, or RME) for the system.
  The term, owner, is defined in the broadest sense with future owners included.
  The owner starts the process, then comes planning and operation.
  DEQ holds the owner as the responsible party, like the VDH model today.

- Comment: The TERM "regulated practitioner" may be a better description of the operator than "highly qualified individual".

- Comment: VDH is missing from the core-diagram as displayed.
  VDH could be the regulated practitioner on either side.
  Traditionally, VDH interacts with the owner.
  An alternative model could include VDH interacting with the regulated practitioner (AOSE, PE, etc.)

DISCUSSION: STANDARDS – FECAL COLIFORM

A reprint of an article titled, "*Interim Guidance on Assessing the Risk Posed by Pathogens Associated with Dredged Material*" by Karl J. Indest was handed out and discussed. The article is posted on the web site. Don suggested that we use Table 2 of the handout as the basis for our drinking water standard for fecal coliform.

- Question: What do we want all systems to perform to with respect to fecal coliforms at the end of the DMZ (Design Management Zone)?
  We want no more than 20 fecal coliform/100 ml leaving the DMZ. We infer some level of treatment from soil.
  The goal should be 20 fc/100ml but not a standard due to other contributors of pollution.
  The consensus was that this is an achievable standard

- Question: What about ponding?
  Ponding is not a problem if the effluent is disinfected.
  Even if disinfected, it is still a nuisance (mosquitoes) and needs to be addressed.

- Comment: Don't set the boundary conditions or limits too low.
  Project them to a high public health standard or best practice. Then we can allow exceptions for certain classes in the regulations, if necessary.

- Comment: Fecal parameters are achievable but don't use a number.
  DEQ has a fecal number in their Discharge Regulations but not for groundwater.

- Comment: Use human designation for fecal standard; use end of pipe as DMZ; then let PE meet compliance standard there with the treatment.
  This mimics NOWRA recommendations.
  To make a standard practical, we'll have to infer some level of treatment in the soils for residential strength wastewater. If we can't achieve this through prescription, then we must decide on a unique performance standard.

- Question: Can the DMZ be used for each standard?
  Probably not. The more we rely on the black box for treatment, the more we need to establish O-M (operation –maintenance) standards.

There are too many possibilities as to what level of treatment occurs in soil.
We'll have to infer some things about the treatment between the end of the pipe and effluent leaving the DMZ.
Ray Reneau says soil-based treatment systems have limited lives.

DISCUSSION: DEQ ANTI-DEGRADATION STANDARD - NITRATES

- Comment: VDH must recognize the DEQ standard and fit into it.
  We can degrade for good cause (building homes) but can't go beyond 5 mg/l for nitrates which violates the standard.

- Comment: We could have exemptions for single family homes. Exemption could also relate to density of homes. A plume created on your property of 15 mg/l nitrate would probably be acceptable to DEQ.

- Alternative No. 1: A prescription standard could be written for different levels of nitrification at the worst case scenario. It needs to be described for every level of treatment. It's up to the PE to move from level to level in this prescriptive matrix.

- Alternative No. 2: Set one standard. An individual can choose to exceed this by using either prescriptive or performance standard. Performance will be case by case specific. Prescription will be general. Performance standard should not be better or worse than prescription standard.

- Consensus: Accept DEQ's 5 mg/l nitrate as the groundwater standard

- Question: Septic tank effluent would not meet DEQ limit at DMZ. How do we design regulations to meet DEQ's 5 mg/l nitrate standard for a single family dwelling?
  VDH has a number of tools to achieve this standard:
  a. Exemptions
  b. Additional treatment
  c. RPA waiver (OK if proper BMPs used)
  d. Prescriptive requirements

- Comment: We could use an RPA, resource protection area or buffer, concept to get further treatment. We could require a larger buffer to allow more treatment. If there's an increase in housing density, the treatment must be addressed.

DISCUSSION: ANTI-DEGRADATION STANDARD – GENERAL

- Comment: Anti-degradation standard is the law of the land in VA. It contains standards for other contaminants such as chlorides, phosphorous and metals. Problems are emerging involving these constituents, mostly in mass drainfields.

- Question: How can we work to comply with these other standards? Is it better to recognize the standard in the regulations and why we can't follow it?
  It may be better to apply the same standard for all sewage systems and then exempt the many types of systems. Economics, density, etc could all be variables for each system.
  If we have a standard in the regulations, folks will begin finding ways to meet the standard. i.e., it will drive technology development to deal with it.
  A design will be deemed to comply with the regulations up to a certain level.
  Before we move forward, we'll meet with DEQ to assure it applies with the intent of their standard.
  Our regulation should reflect a public health standard as DEQ could change their standard that didn't reflect a public health standard.

- Comment: There should be a threshold for being subject to a standard, e.g., if you apply a certain amount of effluent, you will be subject to the standard.

- Question: Are VDH regulations adequate to handle the large discharging systems in the Chesapeake Bay area whose owners are considering switching to soil based Systems?

- Question: For mass drainfields, do we want a letter of review/comment from DEQ before we issued the permit? Or just have DEQ address an isolated, unique wastewater component?

- Don's Comment: keep it as simple as possible where the applicant deals with one agency. Have DEQ review the matrix we come up with on performance/prescriptive standards.

- Comment: VDH must show due diligence to protect ground and surface water. Federal government has requirements for injection wells for states. Each state must follow Federal requirements for regulating these wells. We have to assume DEQ complies with federal requirements and solicit DEQ's input.

- Comment: Write a regulation with performance and prescriptive tracks but don't make manufacturers have to go back and retest to treat for a new component (e.g. Cadmium).
  We can probably assume that residential and light commercial facilities produce negligible cadmium.

- Question: Should a regulation be written based on math formulas or on third party research and testing?
  Failures could be from many sources and many units fail a first test at NSF. It takes some tweaking of systems or maybe an AOSE missed the soils or the PE miscalculated assumptions.
  Often we do not know why a system failed.

The PE community is looking for comfort in the revised regulations meaning they won't be liable for every failure.

- Comment: Regulations won't be perfect and it's up to the regulated practitioner to help fix them.

- Don's Comment: Regulations should give engineers freedom to design good systems. As it stands, regulations sometimes make engineers design stupid systems

- Consensus:
  Use outline (core-diagram) from last week as guide in drafting regulations.
  Use DEQ standard with waivers at DMZ.
  Consider other agency rules too.
  Consider other parameters knowing a component may not be present in all wastewater streams.
  Regulation needs to be reasonable, achievable. A constituent may be present but not practical to remove.
  Allow nitrate at certain level (DEQ standard) with certain buffers, and consider the size of the property and other restrictions.

DISCUSSION: PERFORMANCE STANDARDS

- Question: Given a blank slate, how do you write a performance standard?

- Question: Do you wait to see if component works during performance? Does this mean a PE stamps a manufactured system and let it go (approved) when it may not have a chance of working?

- Question: Should we err on the side of public health, which is VDH's goal? How much is acceptable risk in protecting public health?

- Question: Should the components have individual standards?
  There should be a national onsite standard and process to meet the standard.

- Comment: We must draw the line somewhere: performance outside prescriptive realm. We should be linking front end (site evaluation, design, permit) to back end (owner, regulated practitioner who will operate the system).

- Comment: Many owners don't have a clue to maintenance or type of system they have. The operator has to keep it operating and should have a say in the design and performance standards.

DISCUSSION: BONDING

- Question: Can we ask the applicant to put up a bond as part of the performance standard?

- Question: What is the timeline on the guarantee of a bond?
  Bonding: 2 timelines
  1. Imminent health hazard, large flows – life of structure
  2. 1500 gpd on 600 acres – life of system
  It should be based on the lifetime of the system. One can't bond it forever.

- Comment: The quality of the management entity is related to how much and how long we'll bond the system.

- Question: One can fix a component but not the soil. Soil fixes could be pump and haul, sewer, etc. Will the bond be reasonable and practical?

- Question: Clients must get good service out of the system. How long does it take to assure its working?
  It takes 2 years.

- Question: Is a bond necessary at Level IV or Level V management scheme?
  The utility averages out replacement costs, maintenance over the life of the system(s). Bonding is usually a shorter period to see if the system works.

DISCUSSION: MANAGEMENT PLANS

- Comment: This discussion is moving toward a Model IV or Model V management plan.
  Model IV and Model V proposal must be enforceable. We must have some way to compel O-M and also have liberty to experiment using good engineering practice.

- Question: Should we let the maintenance company set the limits on the performance or set the design standard?
  What are the contingency plans if a system doesn't perform?
  Will the maintenance entity guarantee the system replacement?

- Comment: VDH will not be the person to deny a design parameter but it has to go though the AOSE, PE, and maintenance operator plan and review.

- Comment: There must be a contingency plan in a performance based model. If system fails, there should be resources to fix it.

- Comment: Prescriptive and performance may be only on the design.

- Comment: The performance system could become prescriptive. When a performance system becomes regularly used and reliable, the monitoring can be scaled back.

- Question: When can a developer take a 25 lot performance system to other areas under a prescriptive scheme?

- Question: Are there places that wouldn't fit into Level IV or V? What about a homeowner with renewable operating permit?

- Don's Comment: Prescriptive is done with RME; performance is done with Level IV or V management scheme.

- Comment: Owners only make improvements when they have to.
  When houses transfer, an improved inspection, over what's done now, should be made.
  We should tie the regulation to the lender. Their requirements drive everything.
  There should be a deed restriction to notify the next owner and lender that there's a performance system.
  The lender wants to assure there's a maintenance component to an alternative system.
  Make the regulations give notice to the lender to assure maintenance is assured.
  Some maintenance entities that don't do maintenance.

Next meeting: look at prescription and how we connect prescription to performance. How long do we want to look at systems? How much data do we need to take a performance concept to prescription?

Suggestion: get a better understanding of the groundwater degradation standard.

SHDR Revision Meeting: February 14, 2006

Meeting notes recorded by Duke Price, edited by Tom Joy

The next meeting is on February 21st, 9:30am Conference Room D of the Monroe Building. Thereafter, we'll be meeting in the Fifth Floor conference room of the Madison Building.

Don Alexander began with a recap of the previous two weeks:

1. 5 elements all sewage systems should have.
2. Schematic of *Overarching Performance Goals*

DISCUSSION: PRESCRIPTIVE STANDARDS/RECEIVING ENVIRONMENTS

Today the group worked through **prescriptive designs** and performance criteria in an attempt to nail down where this regulation is going.

Don posed the following questions for consideration:

- Question: How many receiving environments should we define?
  Assume 4 receiving environments
  1. Suitable for STE (septic tank effluent)
  2. Suitable for SE (secondary effluent)
  3. Suitable for Advanced SE
  4. Everything else

- Question: What should a prescriptive standard do?
  A prescriptive standard: should: 1) define the receiving environment (soil, restriction, standoffs, etc.), 2) define source of wastewater, and 3) define the solutions (i.e., systems that would solve the problem.

- Comment: Rainfall needs to be considered (~42", varies from year to year).

- Question: Can septic tank effluent be put in the ground?

- *Consensus: ok to use STE even though it's not a sustainable use of technology.*

- Question: If the site evaluation describes the receiving environment as not being suitable for septic tank effluent, do we go immediately to performance-based design, or should there be an intermediate prescriptive alternative?

- Comment: There are 3 options
  a) Everything can be prescriptive
  b) Everything can be performance
  c) There is some middle ground
- Comments: There needs to be a standard between prescription and performance based. Some systems are suitable for STE, SE and some for the middle ground.

- Question: All systems perform to some level. What do we want to break out in the middle ground?

- Comments: Septic tanks continue to work well; they are reliable, long-lasting, and require low maintenance.

- Comment: Prescriptive systems are characterized by the following:
  a) A defined DMZ;
  b) The FACE principle (fast [or not slow], accurate, cheap, easy).
  c) They use broad assumptions, cookie-cutter standards to solve many problems.
  d) There is an assumed performance of the system.

- Comment: Performance systems are characterized by the following:
  a) DMZ defined by designer (but it can't extend past property lines and streams)
  b) Standards should include a safety factor;
  c) Some monitoring after the first flush;
  d) Receiving environments defined per the nutrients or extremes on soil conditions;

- Question: Why not make the property line, streams, etc. the DMZ for both prescriptive and performance systems?
  Prescriptive systems need clearly more defined limits because they are based on assumptions and will not be as closely monitored as performance systems.

- Comment: The receiving environment could be divided simply by STE and everything else. We could define 4-5 effluent classes (starting with STE), then look at the level of treatment for each that will protect the environment.

- Don's Comment: We need one class of effluent for every receiving environment.

- Comment: Prescriptive systems: VDH samples a portion of the systems to assure performance. Somehow, someway VDH would be taking a global picture of environmental impacts. This is to see if we are meeting the DMZ requirements.

- Question: do we want to switch to effluent levels (includes dispersal) or stay with defining receiving environments?
  We have to look at both.

DISCUSSION: EFFLUENT QUALITY AND RECEIVING ENVIRONMENT

Start with residential, single-family homes: BOD = 300 mg/l

Receiving Environment →		Depth to limiting feature (vertical)	Physical features (horizontal, area)	Perc Rate (area)	Topo (area)
↓ **Effluent quality (Q)**					
Q1 (STE) BOD = 300 1,000,000 Fecal Coliform		• Gravity • LPD • Drip • Mound			
Q2 (Standard 40 system) BOD reduced 90%(30mg/l) < 100,000 Fecal Coliform Total N,P = 30% reduction			Reduce		
Q3 BOD reduced 95%(15mg/l) <10,000 Fecal Coliform N,P = 60% reduction					
Q4 (BOD reduced 99%(3mg/l) <10 Fecal Coliform N,P= 90% reduction					
Q5 (BOD reduced 100%(0mg/l or non-detectable) 0 Fecal Coliform N,P=100% reduction					

- Question: Is the current prescriptive standard for STE adequate?
  The current prescriptive standard for STE is adequate or needs very little change.
  It is more conservative than most state standards.
  However, the current prescriptive standard doesn't look at nitrogen;

- Question: For Q2, are our current prescriptive standards for receiving environment adequate?
  Current standards are not adequate.

- Comment: Consideration should be given to footprint reductions for linear loading rates and pressure dosing.
  We will give consideration to these at a later time in the revision.
  Tyler's chart already has footprint reductions for linear loading rates.

- Comment: We need to look at loading rates for secondary effluent and increase them over what they are now.

- *Consensus: Secondary effluent: look at loading rates and write prescriptive rates. Group is relatively happy with current receiving standards.*

- *No consensus on whether any catalogue level Q3 systems (2 log reductions) exist today.*

- Comment: Phosphorus is not an issue in most soil environments unless the system is very close to a body of water.

- Question: Does one have to meet all standards within a Level?
  No. One can mix and match.

- Comment: We need to account for Nitrogen under the umbrella of the regulations of another agency (DEQ).

- Comment: Table or matrix is to define receiving environments and not to define nutrient standards.

- Question: Is Q3, without N, P standards, a catalogue system?

- *Consensus: Yes, Q3 N, P standards are adequate for now; we'll focus on BOD, FC, FOG.*

- Comment: We need to keep the treatment simple for prescription in order to allow more freedom for the designer.

- Comment: Treatment goal, treatment standard, and receiving environments are three separate concepts.

DISCUSSION: NSF STANDARD 40:

- Comment: NSF Standard 40 is an average test and it's a benchmark (start) test. It's difficult to take NSF Standard 40 data and predict what will happen in the field.
  Systems usually perform worse in the field than they do in the NSF Standard 40 test.

- Problem: We'll have two standards to meet: VDH (revised regulations) and NSF. There needs to be a national test. NSF should consider beefing up their test. NSF test does not distinguish between 10/10 and 30/30. It needs to measure directly and not be predictive.

- Comment: NSF is a private, for profit industry and is a competitor for industry.

- Comment: VDH needs some way of seeing which systems meet which standards. A national testing facility and protocol is needed so all systems go through the same process.

- Comment: ETV (environmental technology verification) is the EPA backed protocol. It tests manufacturers' claims. They verify whereas NSF certifies.

- Comment: We need something more flexible for VA.

- Comment: A 90% confidence interval is needed to assure a system will work. Systems that are more variable need more testing.

- Question: If the tests are done somewhere else, how do you accept them in VA? Lack of maintenance is one reason systems don't work in the field.

Discussion among 5 manufacturers present regarding standards for their products.

- Question: What is the entry standard or how do we separate Q1, 2, 3, 4?

Don will post a paper, statistical study from New England on how many samples one needs from a system for a 90% confidence interval.

- Summary of morning work:
  1. Establish a standard for Q1 and Q2.
     a. Screening standard, pilot testing
  2. Recognize a national standard if one exists.
  3. Provide alternative way to test in VA
     a. Limit numbers.
     b. Require financial assurance.

DISCUSSION: QUALITY LEVELS AND STANDARDS

- Comment: Line between Q1 and Q2 will be drawn at 90% confidence interval on bell curve. This means 15/15 mg/l systems will be Q2 or on the 10% end.

- Q3 – should there be a prescriptive standard here? *Consensus: yes.*

- Comments: There needs to be an operating zone for the installation as it's impossible to practically install at a given level.

- Comment: *Substantial compliance* with the regulations is used now to handle close installation cases. There are situations where 6" installations are not recommended.

- Question: Which RE (receiving environments) standards are unnecessary for Q3?

- Comment: VDH is willing to look at all the standards here. The general consensus is that prescription is ok in Q3 but looser than Q2.

- *Consensus: Q4 systems are not generally or functionally available, but one could be built, so this has to be performance based by a PE.*

- Comment: Industry will only use Q4 and Q5 if there's a demand. Another said there is a demand for Q4.

- Comment: Q4, 5 are for performance based systems.

Next meeting: 2/21/06, 9:30am, Monroe Building, Conference Room D

- Topics for consideration at next meeting:

a) When someone is outside of prescriptive, how do they become performance based?

b) Concept of moving performance based into prescriptive (regulation).

SHDR Revision Meeting: February 21, 2006

Meeting notes recorded by Duke Price, edited by Tom Joy

The next meeting is on February 28th at 9:30AM in the Fifth Floor Conference Room of the Madison Building.

Don Alexander, Director of the Division of Onsite Sewage and Wastewater Services reviewed the RACI (Responsible, Accountable, Consulted, Informed) model and provided an example RACI chart as a handout. The chart is a tool that can be used for identifying roles and responsibilities during an organizational change process.

Don also summarized his understanding of the issues on which the group has arrived at a consensus at Regulatory Revision meetings to date. His summaries follow:

1. All sewage systems should perform to defined Performance Goals.
2. Performance Goals should be achievable and affordable, but the costs of meeting the goals will vary with wastewater characteristics and receiving environments (RE).
3. Performance goals should protect public health and minimize environmental impacts outside the DMZ (Design Management Zone). May have to accept environmental degradation inside the DMZ,
    a. Fecal coliform standard should be 20 CFUs
    b. Other contaminants should meet DEQ anti-degradation standards.
4. Each system should have a DMZ (that establishes the limit of passive treatment), which shouldn't extend past the property line or water bodies.
5. The regulations should recognize active treatment by the design before discharge to the RE and passive treatment by the soils environment after discharge to the RE or after dispersal.
6. With regard to discharge into soils, there are no unsuitable REs; there are only effluent qualities that are unsuitable for certain REs.

- Comment: When we disperse treated effluent, we are protecting the global environment by dispersing an appropriate effluent quality into the micro-environment.

7. For prescriptive systems, the DMZ will be defined by regulation. For Performance systems, the designer will define the DMZ.
8. Current septic tank effluent rates are OK; secondary effluent should support higher loading rates.

- *Consensus: Vertical separation is reasonable as it now stands for prescriptive regulations.*
- *Consensus: Table 5.4 should continue to be bounded and prescriptive.*

9. *Maintenance regulations should reflect the complexity of the system.*
10. *There should be a relationship between confidence in the performance of a system and monitoring requirements, i.e., lots of confidence, less monitoring.*

- Comment: There must be a minimum monitoring requirement, however, and it should include septic tank effluent systems.
- Comment: The risks associated with each system need to be factored into the monitoring requirement.
- Comment: For SE, an owner should be required by regulation sign up for operation and maintenance.
- Comment: VDH should provide financial incentives to persuade homeowners to install systems that include secondary treatment.
- *Consensus: The RE will dictate what type of system goes on a property, and the market will set prices. VDH should stay out of the economics of it.*

DISCUSSION: PREFERENCES OF REGULATED COMMUNITY

- Question: How do constituents (or this group) want to be regulated?
- Comments: With consistency; want performance and prescription.

- Comments: today it's too much emphasis on prescription; it's the homeowner's choice on prescription or performance.

There was a review of last week's table showing effluent quality (Q) and the receiving environment (RE).

Site Evaluation

Site Description (should not be disputed)	Site Interpretation
That which is observable or measurable.	That which requires judgment.

- Question: Can we build a regulatory program around this concept and have it accepted?
- Comment: Responsibilities of all parties need to be defined in the regulations regarding site description, site interpretation, and design.

- Example: Loading rates – require judgement

- Comments:
  a) Have one or two sizes for drainfields which takes out the judgment;
  b) Have no loading rate (anarchist view) – designers will pick the right one for all the right reasons.

- Comment: Loading rates depend on 3 things: effluent quality, method of dispersal, and depth to seasonal water table.

  - Question (again): How do you want to be regulated?

  - Comment: Performance based: A receiving environment has to be adequately defined and has to perform to some level. There will be limited parameters established such as site conditions, effluent limits, etc. It's a way of designing a system involving a set or sub set of performance goals.

  - Comment: Prescription – e.g. what needs to change on Table 5.4

DISCUSSION: TABLE 5.4 SIMPLIFICATION/REVISION

The group discussed various qualities of Table 5.4, including:

1. The need for so many different loading rates
2. The relevance of having perc rates as indicators of loading rates rather than using loading rates directly

3. The possibility of simplifying the table and having, for instance, a single perc rate for each texture group

- Comment: Let's consider STE, for example:
- Comment: throw out the perc test; form a new chart with only loading rates and no perc rate. If area is not a limiting factor, we can usually agree on a loading rate.
- Question: How can we avoid disagreements over the loading rate?

- Suggestions:
  a) Texture or K_s (saturated hydraulic conductivity): Four groups, I-IV and allow some interplay between groups.
  b) Structure: can allow movement within texture groups.
  c) Permeability:
  d) Or have 4 loading rate classes?
     a. 5% Ks safety factor 20x
     b. 25% Ks safety factor 4x
  e) Or
     a. Scenario:
        i. 1 Size fits all
        ii. Same size for STE – only gets bigger for more bedrooms
            $BR = n_x$ s.f.
  f) Q1 = ½ of standard size
     Q2 = another size (smaller)
  g) AOSE identifies the required area and gets a permit. The AOSE then designs for whatever is good for his client.

- Comment: one size doesn't fit all
- Comment: Table 5.4 needs to be modified;

- *Consensus: lower end [5 mpi] of table needs to be brought up; higher end is ok now. Maybe stop it at 20mpi.*

DISCUSSION: PERFORMANCE

Group discussed the umbrella performance goal, (i.e., less than 20 cfu/100ml + DEQ anti-degradation standard) and the Environmental Quality/Receiving Environment matrix by which it can be implemented:

a) Series of effluent qualities such as EQ1, 2, 3, 4, 5 + receiving environment (RE1, 2, 3, 4, 5) = same Performance Goal

- Comment: RE2 is the same horizontal distance in regulations but a reduction in the vertical distance.
- *Consensus: Increase the RE2 loading rate.*
  This would incorporate some GMP to become a regulation.
- Question: would the permitting process change?
- Comment: Prescriptive permit could be designed by a non-PE.

- Comment: There is a need to define RE (site evaluation, site description, etc.). RE1-3 is now in the regulations. There were no upper limits on hydraulic conductivity. There will be exemptions.

Next week: We'll meet in the Madison Building, 5th floor conference room next Tuesday, 28th, 9:30am.

- Comment: we need to define a functioning system or a failure.
  - "Working" means it meets the performance goal.
  - "No ponding" may be part of a definition in a performance goal.
  - Then we'll define the receiving environments and effluent quality.

SHDR Revision Meeting: February 28, 2006

Meeting notes recorded by Duke Price, edited by Tom Joy

No meeting will be held Tuesday March 7th due to the VDH/VOWRA Conference.

Don Alexander, Director, Division of Onsite Sewage and Water Services, reviewed last week's meeting and noted the detailed discussion on Table 5.4.

DISCUSSION: TABLE 5.4

Question: Is Table 5.4 on the way out?

Group discussion: there was no consensus on loading rates in 5.4. Everything in engineering design is a compromise. There is a need to simplify 5.4.

A handout was distributed containing the following charts:

1. North Carolina Drainfield Absorption Area Sizing Chart
   - Presents a range of long term hydraulic acceptance rates for each of four soil groups with USDA texture classes described for each
2. Virginia Equivalent Sizing Chart (Constructed by Don)
   - Similar, with percolation rate ranges shown for each soil group
3. EPA Drainfield Absorption Area Sizing Chart
   - STE and SE Hydraulic and organic loading rates for soil classes broken down by texture and structure with structure broken down by shape and grade
4. Virginia Equivalent Sizing Chart (Constructed by Don)
   - Similar with STE and SE hydraulic and organic loading rates given as ranges for each of the four soil groups

A paper from FL that looks at failure rates on sandy soils with restaurants will be posted on the web site.

The VA safety factor in organic loading rates is to design occupancy for 2 people per bedroom. VA loading rates are a little more conservative but in the same "Ball Park" with EPA and NC.

- Comment: There are two problems with 5.4: 1) It's difficult to call a perc rate between 60-65 mpi, so having a range is good, and 2) loading rates in terms of gpd and BOD – FOG should also be factored in especially for restaurants; Nationally, we're conservative in organic loading rates.

- Comment: Keep 5.4 as it is.

- Comment: I disagree with keeping 5.4 as is. The concept should be to give guidance using perc rates which may vary with the evaluator.

- Comment: Morphological-based sizing charts cause problems with folks who disagree over the permeability of any given soils.

- Comment: Different tools to assess soils permeability all result in similar findings. It appears the discussion is leading to some better guidance in addition to the VA equivalent sizing chart, which is in the handout.

- Comment: WI threw out all permeability tests to determine loading rates. Morphological evaluations eliminated arguments on percolation tests. It is recommended we adopt the EPA chart on page 2 of the handout.

- Comment: We should allow Ksat to confirm morphology and use the EPA chart.

Another handout was distributed that listed 14 guiding principles that came out of previous meetings. Please email Don if there are disagreements over the principles as listed.

- Comment: Prescription should be based on sound engineering.

- Comment: What should be our starting point? We will get to linear loading rates.

- Comment: We should not be writing a technology based regulation. We don't want to see media filters listed in regulations; however, we want to require 30/30 parameters as an example.

- Question (sticking point): If there's a dispute over where one falls on the EPA table, which test will we use to arbitrate? Do we say any hydraulic conductivity test or a perc test? What will we use as a litmus test to resolve technical disputes?

- Comment: We could use a consensus of three AOSEs.

- Comment: We want to verify if water moves through a soil.

- Comment: If there's a dispute, run a Hydraulic Conductivity (HC) test and one cannot use a site that exceeds (or is slower) than the slower rate under dispute.

- Comment: Do away with augers.

- Comment: Do away with backhoes.

- Comment: We should simplify to large and extra large sized systems.

- Comment: We should leave it up to the evaluator whether to use backhoes or augers.

- Comment: I'm shy on designing using water tests. They should be used confirm or deny.

- *Summary of some comments: Water tests may be used to confirm but not to deny.*

- Comment: Assign a theoretical Ksat range to the EPA chart.

- Comment: We should not allow instruments (e.g., permeameters) to determine disputes. Resolution should be based on training and knowledge.

- Comment: The disputes will be on depth to limitations, not on permeability.

- Comment: We could settle the dispute using a lab test on texture analysis.

- Comment: We could have testing tools as an annex to the regulations. Industry recognizes certain testing procedures but government should not.

- Comment: Certain districts check all field work submitted and also question more design rates.

- Comment: Possible methods of dispute resolution:
  - Specify a particular test
  - Allow any test to be used
  - Allow any Ksat test or percolation test
  - Resolve dispute by consensus of AOSEs

  - *Summary: We like the EPA table in concept and there was no consensus toward dispute resolution. VDH will consider the content of discussion.*

DISCUSSION: LOADING RATES

- Question: what do we mean by designing using loading rates and the footprint concept? Linear loading rates are a modifier of the EPA chart.

- Comment: Linear loading rate should affect the chart for shallow systems

- Comment: If a trench is used for single family home, you don't need to worry about linear loading rates assuming installation depth of 18 inches with 12 inches to limiting factor. This results in 30 inches of suitable soils and using septic effluent. When these conditions occur, the EPA table applies and one can ignore the linear loading rates. It contains the maximum loading rates for which we can ignore linear loading rates.

- Comment: Puraflo has proven effluent can be dispersed in soils without linear loading rate problems.

- Question: Should we allow any effluent to go into pads?

- Comment: Some problems with Puraflo may be related to linear loading rates.

- Question: What are system configurations for tighter soils?

- Comment: The failures of Puraflo systems are rarely due to soil perc rates.

- *Consensus: No one wants seepage beds with STE using the EPA chart.*

- Comment: There is a minimum system design that will maximize the biomat potential for dispersal and treatment.

- *Comment: We have agreed our BOD standard for residential would be 300 not 150 per the EPA table.*

- Question: Do we want to increase the loading rates from current gravity rates if we use pressure distribution?

- Example: Let's review the regular and large concept for loading rates. For instance, Texture Group II soils for 4 bedrooms would require, hypothetically, a regular system.

If one doesn't fit into regular or large, then an option could be to use a performance based system.

Consensus: Use loading rates rather than the footprint concept.

Don's goals for the regulation revision:

1. Simplify (or retain what we have)
2. Monitor (to assure system is working)
3. Performance

Maximum Loading Rates with slopes

STE		Q1 (90%) 30/30	Q2 (95%) 15/15
0.8*	small	1.6	
0.6	medium	1.2	
0.4	large	.8	
0.2	super size	.4	

* Maximum rate for STE is now 0.91 gpd/ft^2

- Comment: STE column should be driven by the organic loading rate or .0015 lbs/BOD5. This may influence approved systems which are designed at higher loading rates.

- Question: Do we want to change these numbers for pressure distribution or trench designs?

- Comment: Footprint concept may not be appropriate in reducing absorption area.

- Comment: Loading rates can be affected by management levels to some degree.

- Comment: We may be able to reduce the size or loading rate with the dosing/rest principle and eliminate clogging of the biomat. It's a process issue in managing the distribution.

- Question: Is there a difference between a 2' and 3' wide system?

- Comment: The 2' wide trench works better and there is theoretical data and field experience to support this.

- Comment: In the mid range textured soils, the systems should be required to have pressure distribution and should use 2' wide trenches.

- Comment: (From Infiltrator representative) GMP 116 (Gravel-less Systems) should be incorporated into the regulations without conditions.

- Comment: VDH should recognize that 1000 sq. ft. of gravel trench is equivalent to 500 sq. ft. of chambers.

- Comment: This could be proven in a performance-based system.

- Comment: These concepts affect loading rates:
  - Gravity loading
  - Alternating fields that prevents ponding and rejuvenates the trenches, long term resting
  - Design the LPD to avoid ponding

- Comment: The capital and operating cost for an individual to move 1 lb. of Nitrogen is $450. The use of electricity contributes nitrogen to the Bay also. There's a complex equation involved in determining this.

- Comment: Do the right thing and then issue exemptions.

- Comment: I'm opposed to a regulation that immediately has exemptions. It could be in the preamble but not in the regulation.

- *Summary: People really don't like the footprint concept but would rather go with the loading rate concept.*

DISCUSSION: RESERVE AREAS

- Comment: 100% is needed for all systems or 10,000 square feet.

- Comment: There should be no reserve for secondary treated effluent with pressure distribution.

- Comment: Technology is changing so fast that the reserve area will be diminished in a manner of time.

- Comment: Reserve area could be a consumer choice to set aside a reserve area in between the primary lines. But the problem is the decision maker will not be the one needing the reserve area. The reserve area concept tends to revert back to the STE paradigm.

- Comment: We don't have good data on how long a properly installed and maintained system lasts. 100% reserve area sounds good instinctively. We don't hear of folks getting booted from their homes for a lack of repairing their systems.

- Comment: There should be something in the regulations for recycling systems.

- Comment: Most people don't have money to afford repairs. We need to set aside 100% for reserve.

- Comment: Consumers are not told what a reserve may cost.

- Line of demarcation: VDH district participants believe 100% reserve is necessary for STE while others believe a reserve is not necessary.

- Question: Is a reserve area a consumer protection or public health issue? A show of hands revealed a split on the issue.

- Comment: If we eliminate the reserve area, VDH will not support the change in the field.

- Comment: It's a county issue and citizens expect VDH to protect their interests.

- Comment: There could be areas, which are rare, where we should not put any quality of effluent on a site.

- Comment: I prefer these regulations not to be used as a zoning tool.

- Comment: There are professionals who could design systems to avoid damaging endangered species.

- Question: What's VDH's role in the economic choices of having a repair?

- Comment: Our role should be a little as possible.

- Comment: VDH are the ones trying to hold onto what we've got in reserve areas and even increase it so all systems have 100%. There are no systems that cannot or will not be repaired.

Next meeting: We'll look at performance systems. What standards will repairs have to meet? Will the group be more comfortable without a reserve area with performance based regulations? If we're willing to do it with new construction, why can't it be done with repairs?

A final handout was distributed regarding nitrogen contributions to the Bay

SHDR Revision Meeting: March 16, 2006

Meeting notes recorded and edited by Tom Joy

NOTE: There is a new link on the Regulation Revision web page that will allow ideas for needed revisions to be submitted online. Submittals will be edited and posted, but no responses will be made to individual suggestions.

Don Alexander, Director, Division of Onsite Sewage and Water Services, passed out a handout containing a summary chart and explanations of the five EPA management models:

1. Homeowner awareness model
2. Maintenance contract model
3. Operating permit model
4. Responsible Management Entity (RME) operation and maintenance model
5. Responsible Management Entity (RME) ownership model

The handout also contained a list of twelve problems that can affect OWTS management programs.

- Don: Model 3 is the minimum level used for prescriptive systems.

The following chart was used to show which management levels would apply at various effluent quality levels:

Effluent Quality	Receiving Environment	Management Levels (Models)	
		Prescriptive	Performance
Recycle/Reuse	?		
Q_1 (STE) (300-300)	RE 1	Model 3	
Q_2 (SE) (30-30)	RE 2	Model 3	
Q_3 (ASE) (10-10)	RE 3	Model 3 or 4	
Q_4 (3-3)	RE 4	N/A	Model 3 or 4
Q_5 (Drinking Water)	RE 5	N/A	Model 4

- Comment: Need to think about Recycle/Reuse; do we consider a toilet or field to be irrigated to be an RE?

DISCUSSION: BRINGING EXISTING SYSTEMS INTO LEVEL 3 (OPERATING PERMIT) MANAGEMENT MODEL

Question: What do we do about the 1 million existing systems with no operating permit?

- Treat them as a class?
- Break them down to commercial and. residential classes?

Suggestion: Bring them at time of transfer or change of use. Trigger for VDH could be notification of transfer.

Comment: Real Estate community would have to be educated. Transfers at time of death or divorce would be exempt.

Comment: While writing the footprint regulations, suggestions for inventory of existing systems were not popular.

Comment: Requiring compliance (or even inspection) at point of sale could prevent sale.

Comment: Owner could sell a failing septic system, but the financial burden could prevent the sale.

Comment: Any requirement to inspect existing systems at time of transfer, no matter the inspection criteria, is going to result in a 'defacto' requirement to upgrade systems. Because
an inspector is going to list what he sees....a buyer is going to insist that the seller fix whatever is broken....the only kind of permit the seller will be able to get is one that brings the system up to or close to the most current regulation.

Comment: Currently, the system must be safe, adequate, and proper (The applicable regulations would be those the system was permitted under.)

Comment: WAIVER by Delegate Terrie Suit (?): If a system fails, the owner can construct another one just like it, but if the house sells, the new owner must upgrade the system to meet current regulations.

Comment: Big question is, will owner have to upgrade system even if not failing?

Comment: Preferably, if a system is installed properly under the old regulations and is working, don't require an upgrade at time of transfer. Instead, require more frequent inspection and no upgrade unless the system fails.

Comment: We must have a definite criterion for failure. Assume failure is indicated by ponding or backing up into the house.

Suggestion: Operate off of NSF inspections. An NSF inspection doesn't say that the system is failing; it just describes what is going on with the system, e.g., ponding. Based on an NSF inspection, VDH could say a system is failing if the "ponding" or "effluent above invert of d-box" criterion is checked.

Comment: Some inspectors call a system failing even if it is not failing under VDH regulations. Then owners want a permit because they can't get a loan due to the inspection report.

Comment: there are 3 times when questions arise:

1. Time of transfer
2. When an existing system fails
3. In VA, VDH must approve a building permit for anything related to human occupancy

Comment: Every new system would be inspected every 5 years.

Question: Should VDH require the NSF inspector to make recommendations?

Answer: No. There should be enough information in the report to make a decision.

Suggestion: If we see NSF "ponding" block checked, we assume failure.

Question: The new regulations will contain performance criteria.
Will the standard apply to all systems?

Don: No. If we say "yes", we have just declared a large number of existing systems to be failing. Because we do inspections at time of transfer, we would discover conditions that were not in compliance, so we would find the failing systems. For anything prior to the 2010 (i.e., assumed date of new regs) regulations, the standard should be whatever standard the system was built under.

Comment: If a system is under an RME, and current, we don't need additional inspections. We are just bringing them in to get them going on the "every 5 years" inspection program.

Comment: If the 2000 regulations are OK, then many permits issued under previous regulations are polluting. This is an issue that must be addressed in the 2010 regs.

Comment: If the new regs are too strict, they won't get past the legislature. So, for existing systems, if they are not surfacing or backing up, we assume they are OK and monitor them every 5 years.

Comment: Pre-2010 systems will be out of compliance, but we will write a waiver that will allow them to stay out of compliance until they fail.

Comment: If the use changes, they must comply with the new regulations.

CONSENSUS: If the strength ~~o~~r quantity of sewage goes down or stays the same, OK. If either goes up, the system must meet the new regulations.

Recap: At time of transfer, we will only look at whether the system is failing (Backing up of ponding)

Two Questions:

1. How do we handle systems at time of transfer under the 2010 regulations?
2. How do we handle illegal systems?

DISCUSSION: DESIGNING UNDER THE NEW REGULATIONS

CONSENSUS (Except for Dan Pavon): A PE is needed to design performance-based systems.

Comment: The assumption is that the RME (who is paying for it) would judge the practicality of the PE's performance-based design.

Comment: The fact that the PE would be designing within the regulations implies prescriptive design.

Comment: Two things fit in performance-based design

1. Comply with the RE and try to get the treatment to match up
2. We can define the RE and Treatment system if we know what the quality must be at the edge of the DMZ.

Comment: Make loading rates prescriptive; allow no variation.

Comment: Minor design changes may move a system from prescriptive to performance-based. Can it move back?

Comment: Systems designed under performance criteria could move to prescriptive if they operated successfully for several years.

Comment: The first three Q/RE levels imply performance standards of < 20 cfu and anti-degradation groundwater standards at the edge of DMZ.

Comment: There must be financial assurance.

Suggestion: Suppose we say Q/RE must meet a performance standard, but if you don't have a prescriptive backup, you must have an RME to operate it.

Comment: If the designer finds the worst case, the last resort is pump and haul, which could be done indefinitely.

Comment: It is unlikely that a utility, as the RME, would take chances, but if a backup exists, no RME is needed.

CONSENSUS: If a performance-based permit is issued, there must either be an approved backup system, or an RME.

CONSENSUS: A regulated utility operating under VDH regulations would be required to post bond.

Comment: It would be very complicated to write a financial assurance regulation.

Don's Comment: We anticipate very few performance-based systems where there is a prescriptive alternative.

Question: The push for a performance-based permitting system derives from people's frustrations with the prescriptive model; if we fix the prescriptive side, how much demand will there be for performance-based regulations?

Comment: The performance-based demand could be there for lower safety factors.

Comment: We must focus on the RE; we can always make treatment better, but we must have the RE.

Comment: You can reach a point where additional management has no effect.

Comment: Put the loading rate in the regulations and let the PE design whatever he wants to with that loading rate, but if he changes the loading rate, he must go to the performance standard;

Don's question for the public sector: Is it the role of VDH to regulate experiments?

Answer from public sector: If not VDH, who?

Don's comment: NSF needs to do the testing. VDH should set the standard and the designer or manufacturer should be able to say "We can meet it."

Comment: OK, but the standard of acceptance must be in the regulations.

Comment: Problems will come up if someone says they can do it in half the space, e.g., Infiltrator.

CONSENSUS (?): (With reference to the initial chart) Recycle/Reuse would be both prescriptive and performance for Q_1 through Q_5

Don's Question: What is the best inspection interval?

CONSENSUS: 5-year interval is good.

Comment: As confidence decreases, level of monitoring increases.

System Inspection/Pumping Intervals for Levels Q_1 –Q_3

System	Inspection Interval
Septic System	5 years (and pump)
Pump-septic tank	5 years (and pump)
ATU	1 year
Media Filter	1 year
Drip/LPD	1 year

Comment: If you had two treatment devices, you would inspect according to which required the most frequent inspections.

The final page on the initial handout (12 problems that can affect OWTS management programs) was briefly discussed.

SHDR Revision Meeting: March 28, 2006

Meeting notes recorded by Duke Price, edited by Tom Joy

Don Alexander, Director, Division of Onsite Sewage and Water Services, expressed concern that more VDH field staff are not attending these meetings.

Don recommended the group begin by tying up some loose ends from previous meetings.

The following draft table was offered for discussion regarding performance standards:

Treatment Standard	Receiving Environment	Vertical Separation	Horizontal Separation				Ksat	Hydrology	Loading Rate (divide by "n")
			Well	Prop. Line	Stream	Spring			
TS1 (STE)	RE1	18	100	5	50/20	200 dev.	5-120	Good landscape	.2-.8
TS2 (90%)	RE2	12							
TS3 (95%)	RE3	6							
TS4 (99%)	RE4	0							
FS5(drinking water)	RE5	0							

Prescriptive Designs

- Design manuals
- Deemed to comply
- Single family dwelling

DISCUSSION: FRAMEWORK FOR PERFORMANCED-BASED DESIGN IMPLEMENTATION

Don's question: Is it rational to shift (slide) columns 1 and 2 (TS, RE) depending upon the site conditions?

Comment: The parameters in the cells may not be measurable to an exact standard.

Comment: We are trying to create a prescriptive regulation using hard numbers and we should also create a software program to facilitate its implementation.

Comment: That's true but you have to explain assumptions in the data codes that drive the software.

Comment: We could use the credit concept when a designer uses different designs to overcome obstacles in the receiving environment.

Comment: Credits are really barriers. VDH looks at the risks to public health. These (table) are paths and at times, one may want to go off the path.

Comment: The performance umbrella is the constant and the group has agreed to endorse this umbrella.

Comment: Credits can also be increments. It's a quantifiable way to meet a performance standard.

Comment: If we define the credits, it's really a prescriptive regulation.

Question: What is prescription?

Don: It is a set of design standards set to a receiving environment that is deemed to comply with a performance standard. Without a design manual, one has to offer performance standards that will comply with the prescriptive parameters.

Comment: There has to be a way to evaluate a performance design.

Comment: The credit system is prescriptive. It defines a receiving environment.

Question: How do you define a performance-based system?

Comment: One must throw it back on the designer to make reasonable assurances in case they are wrong in their design.

Comment: So there's no reason to evaluate a PE's plan. That stinks!

Comment: That describes the Charles City pilot program which only reviews the monitoring plan. I don't think we should write a regulation where anything goes as long as you succeed.

Comment: We have one word, performance, which is defining several different words. We are giving the designer a target to hit. Under a performance permit, VDH defines the DMZ.

Comment: How do you prevent cesspools, for example, on 1,000 acres under a performance code?

Comment: We need to outlaw stupidity such as cesspools even under optimum site conditions.

Comment: Prescription is a goal and we need them in the regulations.

Comment: Defining a receiving environment doesn't necessarily make it a prescription.

Comment: Maybe we should examine the food program's HACCP concept, *Hazard Analysis Critical Control Point*, and its applicability to this discussion.

DISCUSSION: RISK ASSESSMENT AS A BASIS FOR PERFORMANCE –BASED DESIGN

Risk Assessment of RE

System design: (loading) organic, hydraulics, linear l.r., instantaneous, microbial, nutrient
Management: Models 1-5, monitoring, reporting
DMZ: vertical, horizontal, hydrology (landscape, Ksat), drainage class > 60", depth to limiting factor > 60"

Comment: We've been jumping to design without considering the risks.

Comment: Your system design is related to your risk.

Comment: You design to the risk. The overall risk is a combination of the RE and the design.

Comment: You are both right. You can't design until you know your risk.

Comment: As a regulator, I must be concerned with establishing a management level (ML) and treatment standard (TS) at the DMZ. The designer then must meet the ML, TS in a way he/she chooses. It's similar to the certification letter concept.

Anish Jantrania drew a matrix: He demonstrated a prescriptive table assuming performance standards. There should be a design manual used in conjunction with the table that shows the standoff to wells and treatment standards or standoff to shellfish waters, etc.

Comment: What we're doing is an academic discussion to get the concepts. We'll have to later discuss how this all works practically.

Comment: Public health deals with infectious dose. People are not getting sick from the effects of highly treated effluent.

Comment: There are unknowns in the influent that people put into their systems. Each system operates under fluctuating confidence intervals.

Comment: A designer needs to know what is deemed to comply in a performance or prescriptive environment.

Comment: We need to agree on these 3 issues: public health, environment (DEQ standards), and nuisance.

Don: We've only hit on one of my 8 questions.

Consensus: We don't want RE 1-5 but would rather follow a risk assessment concept.

Question: Is this all leading to a rule that mandates prescription criteria for performance permits? We will therefore regulate stupidity.

Consensus: Yes we do need to regulate "stupidity."

Comment: There is some simplicity in having a series of matrices rather than one large matrix. You need to know when you have enough area. There are 2 different prescriptions: a site prescription from your risk assessment. The other is a design prescription that will be deemed to comply.

DISCUSSION: FILL SOILS

Question: Where do "fill" soils fit into this regulation? (This was another of Don's 8 questions.)

Another question for lunch discussion: Soil Drainage Management Plan and how or if it should change in these revisions.

Discussion: There were different views on whether engineered fill and natural fill and its suitability for effluent dispersal.

Fill or natural

Fill		natural soil
Man-made/Not engineered (silent on this type) OR Fill	// engineered fill	site characterization/risk assessment

PE required, “pure
Performance”, O & M, financial assurance

>> system design >> maintenance>>
monitoring

Comment: It is difficult to characterize with high confidence on whether fill adequately treats and disposes of sewage.

Comment: There needs to be options for a back-up or assurances in case the man-made, engineered fill fails (bond, 100% approved back-up).

Comment: Local government already think alternative systems will fail and they will oppose a regulation that endorses greenhouses as back ups with bonding.

Comment: Less than 1% of our problems have to do with fill and a lack of options.

DISCUSSION: MOTIVATION TO MOVE PERFORMANCE SYSTEMS TO PRESCRIPTIVE

Question: Why would a PE (Professional Engineer) come up with a design manual to move their system into the prescriptive part?

Comment: They won’t be motivated but the public will demand that the division come up with a design manual(s).

Comment: If a design manual is deemed to comply with a number of performance standards, it should not need to comply with other prescription standards.

Comment: A PE will not be motivated to make a design manual for certain systems and will do mostly one-of-a-kind designs.

Question: How much data do we need to approve a new filter media, for example, being proposed for use in a prescriptive plan?

Comment: The TRC could be a subset to the advisory committee. A PE can go into a performance mode without going through the TRC.

Comment: We should minimize the negative effects of designing manuals. Regulatory actions act as filters or hurdles.

Comment: Gravel trench system designs in SHDR are an example of this filter for designs.

Consensus: VDH will consider the discussion on design manuals even though we are not now interested in establishing design manuals.

We addressed 2 of Don's 8 questions.

Next meeting is Thursday, April 6, 2006.

SHDR Revision Meeting: April 6, 2006

Meeting notes recorded by Duke Price, edited by Tom Joy

Don Alexander began by stating that attendance may be lighter today due to conflicts with other meetings.

He began the discussion by drawing a diagram of a treatment zone (TZ) of DMZ (Design Management Zone) and table with Ksat as a variable.

Performance standard: <20 cfu/100ml; DEQ anti-degradation standard; life cycle?

Treatment zone (gleyed matrix or other restrictions)	Ksat 120 (2% gray)	∞
18	TS1	TS2
12	TS2	TS3
6	TS3	TS4
0	TS4	TS5

Concepts:

1. TZ drives TS (treatment standard)
    - Management level
    - Application rate

2. Ksat drives loading rate

Treatment Zone		BOD
TS1	STE	300
TS2	90%	30
TS3	95	15
TS4	99	3
TS5	TS4 with disinfection	

Public Health or Environmental Interests	Setbacks of Practical Interests
Wells, water features (lakes, rivers, streams…?)	Property Lines, driveways, foundations, foundations, off-site water (downspouts, other drainage)
sinkholes	
Modifiers (standoff distances): TS,	

management level	

Comment: Our regulations have treated gray soil as water table. It's questionable whether anything is impervious.

Comment: The design life is a performance standard.

Comment: The designer has to be accountable for some period of time.

Comment: On bigger engineering projects, sustainability has to be shown on the cost analysis.

Comment: The electric power business is a model to study on system sustainability.

Revelation: Current regulation assumes a life cycle cost of zero. That's the problem and why we don't understand sustainability. It's like, "Tell me how long it'll last without me spending a dime." That's why we don't guarantee any life cycle in the current regulations.

Comment: It's fascinating to see the numbers bend when you do a 20 year life cycle cost analysis.

Comment: I like the idea of the regulations addressing life cycle generally but not through a mandate.

Comment: If it's in the prescriptive box, it's deemed to comply.

Comment: There aren't any systems in the box yet. I think we're going down the right path.

Comment: Do want to look at life cycle cost or anticipate life cycle?

Comment: I think we want to look at cost.

Comment: How much reserve area and what system is to be used as reserves drives the life cycle cost.

Comment: They are doing this with homes in Europe and it's tied to energy rating. Each manufacturer would have to submit a life cycle cost analysis with their design manual.

Comment: This should apply up to Management Level 3.

Comment: If we put the information out there, people will be forced to consider it.

Comment: It should be required information, not regulation.

Comment: Normally, a large engineering project will have a life cycle cost.

Comment: VDH will do the life cycle cost for a conventional system; each manufacturer will come up with their life cycle analysis.

Comment: We could say you must analyze the cost of the system according to the life of the structure.

Comment: I want to be sure we are getting life cycle costs that are reliable.

Comment: It should not be a performance standard.

Comment: I have a problem with the modifiers. I especially don't like the reduced standoffs to wells when an owner may not be maintaining their systems. Public perception of this will be critical.

Comment: What we have up to now works. Keep the same standoffs to wells.

Comment: Don is introducing different levels of confidence.

Comment: My biggest problem is perception and the biosolids folks hear the brunt of these complaints.

Comment: In the field, it's stupid to have so many safety factors in a design which are not defined.

Comment: Our regulations are not technical standards. I want to have adequate standoffs. I want to know what the safety factors are and research what the numbers are.

Comment: Since we don't have the data, we will refrain from further discussion of opinions.

New Topic – teased out from the last few weeks

All systems have to perform to this performance standard:
<20 cfu
DEQ A.D. standard
Life cycle cost analysis

1. Prescriptive (deemed to comply)
    a. SFD
    b. Design manual

2. Hybrid Performance (deemed to comply to some extent)
    a. Complies with TZ/TS/LR matrix
    b. PE design

3. Pure performance
    a. Sampling/verification
    b. Management level 3/4/5?
    c. PE
    d. DMZ defined in permit
    e. Financial assurance

Question: How does this concept sound? Is this what we've been saying during these meetings?

Consensus: No response from group.

Comment: It sounds like traditional, provisional, and experimental.

New Topic

Don drew a schematic of a trench bottom and a drip tube. We should give account for the volume of soil around and under the dispersal interface. It was suggested that a limit of 3 feet below the trench be established and it's not important the volume beyond that.

His example used 60 minutes per inch percolation rate and 1800 square feet of drainfield.
Trench: 6,480,000 cubic inches of soil (6x100'x3', 9' centers trenches)
Drip tube: 6,220,800 cubic inches of soil (24x100', 6' centers runs)
Use a 3 to 1 ratio.
Is there a way to give a credit to having more than 18" of soil? Or is there a way to trade area width for depth?

Concept: Decreasing the loading rate and increasing the size of dispersal area allows one to reduce the standoff to a restriction.

Question: Are the effects of soil volume the same vertically and horizontally?

Comment: We need to see some data.

Question: Can you design a process for it? How do you hold designers to a performance standard?

Comment: This may make it harder for owners to subdivide their property in the future with a limited DMZ without upgrading their sewage system to the next higher level.

Consensus: We need to study this concept and review Dr. Reneau's work.

New Topic

Allen Knapp began the afternoon session with the suggestion that we review DEQ's recycling and reuse regulatory attempts. They have revised their original attempt at establishing regulations. Their meeting minutes were used as a starting point.

DEQ minutes: general reuse in private homes, indoors, should not be allowed (toilet flushing).

Comment: Someone needs to coordinate what they are doing with our efforts and our regulatory authority.

Comment: They may be proposing if one treats to 10/10 standards with disinfection, one doesn't even need a permit. They would probably look at our work and ask why we are breaking it down in such great detail.

Comment: They are looking at what comes out the end of the pipe and at the use of such wastewater. They are not concerned with treatment as we are.

Comment: It sounds like they are concerned with above ground application of reuse whereas, we are concerned with in ground reuse.

No meeting next week. This is posted on the web.

SHDR Revision Meeting: April 18, 2006

Meeting notes recorded by Duke Price, edited by Tom Joy

Don Alexander, Director, Division of Onsite Sewage and Water Services, began by reviewing the group's progress and key concepts of consensus.

Prescriptive – Performance – Hybrid standards

Performance standard (applies to all) : <20 cfu/100; DEQ's anti-degradation standards, life cycle cost analysis.

Treatment zone	Ksat 120 ∞	
18	TS1	TS2
12	TS2	TS3
6	TS3	TS4
0	TS4	TS5

Other topics we need to discuss are SFD, design manuals, "deemed to comply", AOSE/PE (may be VDH).

Don opened discussion on other design or treatment issues not yet covered.

Comment: We need to address the following issues:

1. Existing homes without indoor plumbing.
2. Existing systems that are changing use.

Comment: We should adopt the draft GMP on existing systems as a regulation.

Comment: Policies are not regulation and need to migrate into regulation.

Comment: The group's progress to date should be drafted and brought back to the group for comment.

Question: Is ponding in a trench a problem? I think after 2 years, most systems pond in the trench seasonally or temporarily.

Comment: I think it happens also and there's a difference in rainwater ponding and anaerobic ponding.

Comment: We won't bog down on it, but VDH will ponder this issue.

Comment: It's good public policy to know where systems are and where there are failures.

Comment: Requiring inspections on transfer is another topic VDH will consider.

Comment: There should be permits for all, and upgrades should be required at property transfer. Mortgage companies would be the enforcers.

Comment: It could be a requirement that money be set aside automatically at transfer for a sewage system upgrade.

Comment: A seller usually has to have his property in good condition for the buyer.

Comment: Would this create problems getting the regulations through? The real estate profession might say it will make it harder to sell a home.

Don's Comment: Each new owner would have to get an operating permit. Expansions often happen when ownership changes.

Comment: We also need to bring into the regulations Delegate Suit's issue of waivers for failing systems.

Comment: We could review the items that need changing in the regulations on our internal web site that evolved from a Polycom with EH Managers.

Comment: Unless we deal with local ordinances, the regulations we write won't have much impact.

DISCUSSION: ~~DESIGN~~ SYSTEM MANUAL [PRE-ENGINEERED]

Site conditions	Design standards	Construction standards	O & M O=homeowner M≠homeowner	Inspection
e.g. RE3(i.e., 1 or 2) or better with 12" standoff	Design specs, (not specific products) Manufacturer determines which specs meet their criteria **E.g. Outlet filter: NSF 41 minimum; 1/16 = this is what's approved**	How to put the system in.	Trouble shooting guide	Construction Start up Periodic Check lists

Component Manuals/Approval (PE use)

Comment: Have separate manuals for hybrid systems.

Comment: You've got to set minimum prescriptive standards.

Comment: Manuals have to make it perfectly clear how a system is installed. Whatever is in a manual has to be adhered to. There can be no mixing and matching.

Comment: Each manufacturer would submit at least one manual. VDH, per this group's suggestion, will write the traditional gravel trench manual.

Comment: GMPs are going away.

Comment: A manufacturer may want to list a minimum generic control panel but may not want to list all the panels that may be used.

Comment: The TAC may look at principally 5 things a panel, for example, has to do. It has to meet a company's criteria so the panel manufacturer can upgrade, delete and not have to go through the TAC again. The manufacturer sets the criteria. It has to be PE stamped and on the manufacturers list in the manual.

Question: What's the process when a flawed manual is discovered?

Comment: We'll revisit that issue when discussing the TAC and its role and responsibilities.

Comment: The first manual will be judged on minimum standards in the regulations.

Comment: There needs to be a way to modify and evaluate the standards approved in manufacturers' manuals by the TAC and also to evaluate how systems perform to the standard.

Comment: The first manufacturer to write a manual will exceed the standard, and those following will be somewhat less conservative in order to find a market place niche. It's OK as long as they meet the standard.

Comment: We need to establish how they meet the standard.

Comment: Manufacturers would have to justify standards used in system manuals.

Comment: The system manual will serve as a baseline conceptually for what is approvable.

Comment: The manual allows a designer to pick and choose the component manufacturer they like if the components meet the standards in the manual.

Discussion: There was brief discussion of how many design manuals to expect, the need for a gravel trench design manual by VDH, and the role of installers versus designers in picking components.

Comment: VDH should keep the GMPs and just provide manuals for components. Manufacturers could use the GMPs as references when writing their manuals. Intelligent hyper-linking could help designers to bring together all these components.

Question: What happens when there are conflicts in the manuals or if manuals attempt to exclude other companies?

DISCUSSION: SOLVING THE SYSTEM MANUAL DILEMMA

Question: How far should the regulations go in telling manufacturers minimum standards to include in their system manual?

Comment: The TCR will require the manufacturer to justify any deviation from the standard (regulations).

Question: What are some standards we want to see in the regulations?

Comment: Depth of installation needs a range or window.

Comment: We need to allow for professional judgment and substantial compliance and not approve or disapprove based on 1/8 inch deviation from the standard.

Comment: Loading rates for each quality effluent must be in the regulations.

Comment: If loading rates exceed what's in the regulations, the design will be purely performance and will require maintenance and monitoring.

Question to the group: What is the purpose of having a system manual?

- It tells you what the manufacturer will stand behind.
- It defines the extent to which VDH will allow non-PEs to do designs.
- It facilitates the VDH review.

Comment: GMPs are vague and don't interpret how or if different components can be utilized.

Comment: Manufacturer should just refer to the component manual and have a (e.g.) hyperlink to acceptable components.

Comment: We should not restrict the designer in what they can choose for a site.

Question: What will a system manual not do?

- Give you a design for a specific lot. It could give guidelines.

Comment: I can see how component manuals may conflict with system manuals.

Comment: That's a good point and it will come up; however, the TRC can work out the specifics on conflicts.

Comment: Regulations can present parameters and give guidance for manuals, with policies interpreting in more detail.

Comment: There has to be a mechanism for dealing with failures using the prescriptive requirements.

The next meeting is Tuesday, April 25th.

SHDR Revision Meeting: April 25, 2006

Meeting notes recorded by Duke Price, edited by Tom Joy

Don Alexander, Director of Onsite Sewage and Water Services, opened the meeting by reviewing the Treatment Standards, Receiving Environments, and Management levels previously discussed. The group still needs to go through the GMPs and other sections of the regulations such as the purpose. Part IV of the regulations seems to have been covered by previous meetings.

Don recommended the group consider the "sustainability" concept as we continue to work toward revising the regulations.

Don's Comments:

- The group agreed to have component and system manuals. I think we'll have the core regulations and the manuals. Also, as time goes on, we will have things that are a lot like GMPs, even if they are not called that.
- I want to have as much policy as possible written into regulation. I promote a hybrid approach.
- The aim is for a "minimalistic" set of regulations.
- Loading rates and receiving environments would be in the regulation and there'd be a minimum of standards in the regulation..
- I'd like to put design standards outside of the regulations.

Comment: Loading rates, setbacks, etc. should be in the regulations.

Comment: Design criteria should be in the regulations. As a designer, I'm protected by having criteria in the regulations.

Don's Comment: There will be three ways to do business:

1. Prescriptive (deemed to comply): For AOSEs and PEs. Would apply to single family homes, duplexes, less than 3 stories. System manuals would tell you all about how to design, install and operate systems. The designer would be protected.
2. Pure performance: Would offer no protection for designer
3. Hybrid: If certain conditions were met, there would be some level of deemed to comply, even if not in system manual; Level of protection uncertain.

Don's Comment: The method of processing applications for community-based systems needs to be re-evaluated. (Don foresees a need for more locally based permitting, because the three VDH reviewers will be inundated.)

Comment: We need to work with third-party testing firms to tell them what's expected of them under our new regulations. Local health officials should not be doing the reviews; we'll have to be enforcers.

Comment: I agree that less fragmentation in the review process is better. It will lead to more consistency.

Don's comment: We seem to have 2 problems at least and we're mixing them.

1. The regulations are how VDH discharges the authority given to it by the Code of Virginia. There are no real criteria in the Code; the regulations, however, are more specific.
2. GMPs are interpretations of regulations. Comply with GMPS and you are complying with regulations. Violate GMPs and you are not complying with regulations.

The confusion is that we have policy in our regulations. Minimum regulations should have goals and objectives with basic prescriptive standards. The loading rate and how you calculate it should be in the regulations to be fair with all.

When we get the new regulations written, we need to evaluate what resources we'll need to implement them. I hear complaints about consistency and timeliness. They come down to a couple of issues. One is resources. We're running a complicated program with a skeleton staff. We are at least 30 percent understaffed. There needs to be frequent communication within (local health departments) and without the department (AOSEs). When people hear the intent of the program or policy, most of the local policies and inconsistencies go away.

Comment: Let start with the GMPs.

Comment: If we do this, we're not starting with the backbone, the regulations.

Comment: The GMPs are diverse and cover product approval, policy, provisional and experimental systems, and a mixture of these.

Comment: We need tight, simple, prescriptive regulations. Anything beyond that has to have a performance standard with management.

Question: What would you put in the prescriptive regulations, e.g., mounds, LPDs?

Comment: Basically, what's there now like loading rates and standoffs. In general they're working now. We need to just simplify them and make them more consistent with all products and technology.

DISCUSSION: SYSTEM MANUALS VS. REGULATIONS

Comment: The group seems going toward a system manual for each prescription. The manual would just say how you're going to do that.

Comment: I understand the confusion. The regulation should say this is how you install my product.

Comment: GMPs and product approvals are going away.

Comment: The way I view the regulations, they are fairly clear. The GMPs make them cloudy.

Comment: This discussion reminds me of how people feel about change and where they fall on a continuum: baby steps or large steps.

Comment: Product approvals become a nightmare at the county level. System manuals need to just state how to install a product.

Comment: The regulations have got to say what you can do at this treatment level.

Comment: The intent of the manual would be the prescriptive design for a system. Square footage would be in the regulations.

Comment: The regulations should be ½ inch thick. The stack of manuals would be 2 feet tall and would complicate matters. You shouldn't ask the counties to have to go through so many manuals or have to even consider them. What is the benefit of the manual?

Comment: There could be six manuals impacting one design.

Comment: Design manuals would allow AOSEs to work within their skill level but not to practice engineering by mixing and matching system components.

Comment: Manuals need to be "standardizers" which come through the TAC.

Comment: An analogy could be in the building industry where toilets, piping, etc. are not defined in code. It allows some flexibility in design.

Comment: Design manuals are necessary for specific products, but they do not necessarily need to include designs for the dispersal system. They should just cover their specific product.

Comment: The AOSE community wants a system which includes dispersal. We expect the manufacturer to describe a complete system.

Comment: The local health department should not be involved in a design decision. It just must meet our regulations.

Comment: Manuals must state how their system is to work and under what conditions.

Comment: The review will still entail a review of a system(s) manual(s).

Comment: I would agree with no more VDH reviews if everything was performance based. VDH would just need to verify the system is working like it's supposed to.

Comment: When an AOSE or PE mixes and matches, they are accountable. But if they take a design from a manual, the manufacturer is accountable for their system.

Comment: The market is going to drive toward using system manuals and not mix-match, which entails more accountability.

Comment: VDH is to assure compliance with the regulations and not compliance with the manuals.

Comment: The ultimate liability goes with the homeowner. The "individual home" manual is what the local health department is concerned about.

Comment: The local health department just needs a list of components that are approved. If site conditions require a certain treatment or dispersal and proposal meets what's on the list, it's approved.

Comment: The list will go through the TAC, but a manufacturer may not have to go through the TAC.

Comment: I think a manufacturer has to have their system manual approved by the TAC.

Comment: There has to be a uniform process of approval for each manufacturer.

Don's draft definitions: A component is the smallest device within a system, e.g. a piece of pipe. A system is the whole "ball of wax." A subsystem is an assembly of components to treat or disperse or move effluent.

Comment: I'm against a design manual.

Comment: If there's no design manual, a PE has to design each system.

Comment: We're trying to carve out a body of practice for non-engineers that will be deemed to comply with the regulations.

Comment: Why should a regulator care about a design?

DISCUSION: REVIEW OF CURRENT REGULATIONS

Don handed out and reviewed a two-page document titled "*Objectives of the Onsite Regulations*" containing initially 32 items. Other items were added to this list as shown below.

Comment: The group still needs to tackle how a performance based system becomes prescriptive. The evaluation period needs to be in the regulations.

Discussion: There were comments regarding the practicality of implementing the current Discharge Regulations as they relate to O-M requirements. Civil penalties would help, as well as more resources, licensing and certification of providers, and a reporting system online.

Comment: We should be getting handlers to report how much, etc. they are handling. There is software already designed mainly for business management.

Comment: It gets back to an earlier point about communication.

Comment: We've been asking for civil penalties since 1997 so it may or may not come. Public policies sometimes evolve because of reacting to a drama case, catastrophe or a specific environmental degradation.

Added to the list of objectives:

- Civil penalties to assure maintenance occurs
- Reporting requirements for septage haulers.

Question: What would happen if VDH were to "un-appoint" itself as the guardian of pre-approved systems?

Comment: VDH doesn't care if folks practice engineering without a license. It's a DPOR issue. The GMP on practice of engineering was just to get some consistency on how VDH runs the program.

Comment: We should eliminate the terms "formal" and "informal" plans.

Comment: We should update the roster of professionals on the Advisory Committee to include those whom we regulate. Think about who should be on this committee for the next meeting.

The next meeting is May 2nd.

SHDR Revision Meeting: May 2, 2006

Meeting notes recorded by Duke Price, edited by Tom Joy

Don Alexander, Director of Onsite Sewage and Water Services, opened the meeting with suggesting a review of the existing regulations by section. He hopes to eliminate discrepancies.

Comment: There needs to be guidance or clarity on the relationship of these regulations with local ordinances.

First section reviewed: members of the Advisory Committee.

Comment: The TRC would be a sub-committee of the Advisory Committee.

Comment: The TRC should be specialists and separate from the Advisory Committee. It would look at products and would be composed of practitioners.

Comment: The TRC should be part of the Advisory Committee to keep abreast of policy discussion.

Comment: The TRC will be a thankless job as they'll be doing double duty.

Comment: We should add a consumer development representative.

Question: What if the Advisory Committee named or established the TRC as a subcommittee and establish ad hoc committees as needed.

Comment: The TRC and the Advisory Committee will make decisions on recommendations.

Comment: I think the TRC should answer to the Commissioner to keep things under control.

Comment: I like the TRC being independent of the division.

Comment: The TRC could be members of the Advisory Committee and could appoint ad hoc committees.

Next section: Grandfather clause

Comment: The rub will be in changing the regulations and then having hundreds of lots falling in this category. It may not apply though.

Next Topic: Substantial Compliance definition

Comment: We tried to add this in the 2000 regulations.

Comment: It's a deviation from the regulations more than a scintilla (a spark or a trace).

Comment: It's a decision made case by case by the professional involved: PE, AOSE, or EHSS.

Comment: The conclusion of a substantial compliance decision cannot lead to damages.

Comment: It defies definition. We should leave it alone. The regulations talk about substantial compliance, exceptions, and variances.

Comment: I like definitions. They nail it down. They come after you've developed the regulations. It will simplify the Department's life over time.

Comment: It's a clarification issue. Sometimes they create more problems.

Comment: I have 46 pages of definitions from a consortium.

Consensus: If we need definitions, we can rely on the list from the consortium.

Next section: Enforcement

Comment: It's the purview of the Department. We would like to have authority for civil penalties to make a performance-based program work.

Comment: If you're making a case decision, you need to take the locals out of the decision.

Comment: The authority for the law is under the locality. It's complicated.

Comment: Let's hold this discussion for when we get to subdivisions.

Next section: Variances

Comment: I'd like to see an application to standardize the information submitted. It would be in a format that guides people.

Question: Is there a standard in the regulations for evaluating variances?

Comment: Yes. There are 8 items for evaluation.

Comment: The current items don't ask the applicant to develop these standards to be included in each application.

Question: Do we want to take things off the table and limit what variances can be granted?

Comment: We can add that an AOSE may be consulted to justify the request.

Comment: We could make it clearer what would be supporting documentation.

Next Section: Hearing Types – this comes right out of the Code and we can fix some things in there.

Next section: Permits

Section 250 – this section is entirely too big. It describes types of systems. It originally was designed to describe the processing of applications.

Comment: We may want to say what an AOSE can do and what requires a PE. It would mimic the DPOR requirements.

Comment: My suggestion is to redefine the terms, Type I, II systems.

Comment: Preliminary engineering conferences (PEC) don't really accomplish much.

Comment: I don't see it being done enough. What's the trigger when a PEC is not required?

Question: Why is this information on designing systems in our regulations? Why not take all this information out on who can design a system?

Comment: We want to assure non-PE's are not designing systems that should be designed by a PE.

Comment: We should just receive the AOSE/PE submission and not review it unless we do one occasionally for QA. They are professionals so we should just issue the permit.

Comment: We could change things to where the AOSE/PE just hands in a notice that they are installing a system and VDH has the opportunity to review it. This changes the perception and moves us from designing systems and issuing permits.

Comment: This is pretty radical and gets us out of issuing permits. By Code, our role is just to set up a program for issuing sewage system permits. We would just issue operating permits.

Comment: There would be 2 routes: hire an AOSE and give VDH notice or hire VDH and we issue the permit.

Comment: The notice would mean that after 15 days, the notice is deemed approved.

The government is just a review agency and should not be perceived as an obstacle.

Comment: There is a whole body of law built around VDH issuing permits.

Comment: It doesn't pass the sniff test; a system could blow up and it gets to the legislator; they would question why we didn't even review the permit and just issued a registration.

Comment: We shouldn't try to solve agency internal problems such as obstructing permitting by revising the regulations.

Comment: I'm talking about a paradigm shift in the agency.

Comment: If I could change one thing today, it would be getting VDH out of doing site evaluations and issuing permits.

Comment: The Code says the Board may establish requirements to obtain a permit. Where can it go wrong? The general assembly has already established the time lines regarding back logs and processing times. So we'll retain a 15 day window to review the site before construction.

Comment: We could just receive the application and issue the permit in the same day.

Comment: My personal experience is that VDH adds public health value by doing at least a level I review within the 15 days prior to the "deemed approved period."

Comment: There'll still be mistakes but no more than what's occurring now. It's also a comfort or familiarity piece that needs to be changed. The building official, AOSE, EHS may not be quite ready to enter this new paradigm.

Comment: We must focus in on the bad actors to prevent an increase in bad AOSEs if they are given sole responsibility for system design. Strong enforcement is necessary.

Comment: PE's must have their plans reviewed by VDOT before construction.

Comment: Reviews could still occur within the 15 days or during and after construction. We'd prioritize on doing reviews. It would take profiling on which ones to review.

Comment: We don't need to write it into a regulation but we could do it internally. We could assume AOSE work is valid without a review.

Next section: Subdivisions (and multiple certification letters)

Comment: It makes more sense with subdivisions, to require certification letter applications for each lot. It's neat and clean but may require more appeal defenses as we're making a case decision. We'll still sign plats as long as we have the information required for a certification letter. Applications would become a part of the subdivision process. We would then have a certification letter on each lot.

Comment: I think a paper review similar to what we're doing now is reasonable. We'd review the preliminary design for each lot.

Comment: I believe in keeping the option open to review some of the lots.

Comment: As a person being regulated, I don't want to leave the review option open. For consistency, there should be a clear requirement for a review or not.

Next topic: Existing houses and expansions.

Comment: We would come as close as you can to the regulations. We'd treat it like a repair. If I'm adding on a bedroom, the building official doesn't make me go back and upgrade the existing wiring, etc. Only the new construction has to meet current building codes.

Comment: I agree. If it's ok for single family homes but not for commercial properties.

Comment: All these revisions must deal with a tension of economics balanced against public health.

Comment: One idea is to have conservation easements. We'd allow systems if one incorporated a conservation easement into the design. It's like having a buffer which is recorded.

Comment: We need to know what we'll do with the repairs section before dealing with the expansion issue.

Comment: Even though they are existing homes, they don't have standing. We may offer them a waiver such as we're doing with repairs.

Comment: If a home burns, it doesn't seem the right time to force them to upgrade their system to the current regulations.

Comment: The other view is that the local health department, after an evaluation, doesn't want to state it's safe, adequate and proper. This has come here as an appeals. If there's no NOV or history of failure, we may be able to issue a permit that complies with the regulations to the greatest extent possible. It may involve upgrade to the system.

At the next meeting on May 9th, we'll continue to go through the regulations and the GMPs. June 20th may be a last meeting date.

SHDR Revision Meeting: May 9, 2006

Meeting notes recorded by Duke Price, edited by Tom Joy

Don Alexander, Director of Onsite Sewage and Water Services, opened the meeting by suggesting we have just 4 topics to be discussed to finish reviewing the regulations. We could finish today.

1. Repairs, replacement, expansion.
   - Replacement means, for example, constructing a home in place of a mobile home
   - Expansion refers to changes and to increasing bedrooms.
   - We have to define repairs.

2. Experimental/Provisional.
   - How do we evaluate systems?
   - How do we move them from pre-engineered to general approval?

3. Soil Drainage Management Plans (SDMP) and Sand-on-sand systems

4. GMPs – 103 active; split evenly between policy/guidance and product approvals
   - Product approvals will go into manuals.
   - Some of the rest will go into regulations.
   - Some will just go away.

DISCUSSION: REPAIRS, REPLACEMENTS, EXPANSIONS.

Bob Croonenberghs, Director of the Division of Shellfish Sanitation, explained the shellfish shoreline monitoring program which includes septic system surveys. Bob also explained the use of fluorometers in detecting contamination indicators (optical brighteners) from subsurface effluent.

Question: How do we deal with this since it doesn't fit either failure criterion (i.e., breaking out (ponding0, or backing up)?

Don's Comment: We now have a third failure criterion – groundwater contamination.

Discussion: There was discussion on the viability of viruses and advanced secondary treatment.

Comment: A new system will cause a plume as you're putting effluent in by the square foot.

Comment: We don't care about optical brighteners but do care about fecal coliforms and viruses.

Don's Comment: I think optical brighteners will eventually be found to have an adverse environmental effect.

Comment: We could have the following classes or modes of failures:

- Component – component problem
- Functional (output) – system fails to produce satisfactory effluent at DMZ
- Operational – system doesn't work mechanically as designed

Failure
Out of compliance
Deviation

This concept can be viewed as a *failure scale* (above).

There'll be different failure modes, different actions, and different consequences.

Comment: I like conveyance, treatment, and dispersal failure classes.

Comment: Let's not confuse the indicator with the failure. Fecals or optical brighteners are indicators but not proof.

Bob's Comment: We will leave the findings up to the local health department to analyze whether or not there's a failure.

Comment: We may want to put a fecal limit of *undetectable* at the DMZ adjacent to shellfish waters. We originally put 16 fecal coliforms/100ml at the DMZ.

Comment: With a limit of 16 fecal coliforms/100ml at the DMZ, you wouldn't be able to measure the impact 50 feet away.

Comment: Shellfish seems to be concerned with legacy systems or old systems that are failing. This is a big picture item that we haven't discussed.

Don's Comment: Take "Functional" as the only type of failure.
It would have three subtypes, and each of those would have two subtypes:

Functional (output) failure– system fails to produce satisfactory levels at DMZ

- Treatment failure
    - Component failure: (i.e., Pump, pipe, soil [clogging/channeled flow]
    - Installation failure: (e.g., Assembly fault)
- Conveyance failure
    - Component failure
    - Installation failure
- Dispersal failure
    - Component failure
    - Installation failure

Comment: We also need "Compliance" (i.e., not operating as designed) as a second type of failure mode besides Functional

Comment: Shellfish is OK with this concept and draft definitions.

Question: How does this discussion of failures fit with replacements, change of use, and expansions?

DISCUSSION: CHANGE OF USE or EXPANSION

Comment: I suggest we leave this as 'it must meet the current regulations.'

Comment: We don't have authority to rule on change of use. We can only comment to the building official if the system is safe, adequate and proper.

Comment: Expansions must meet the current (i.e., new) regulations also.

Question: When someone asks us to say something about their existing system, what do we say?

Comment: Example – If one is converting a house to an office and cutting the flow in half, then it must meet the current regulations.

Comment: Here's a real scenario: a lady buys an old school house with a 1948 system. She's converting it to a bed and breakfast and flea market. It's essentially residential sewage. The building official asked the health department for a safe, adequate, proper (SAP) analysis. The site doesn't meet the current regulations, and VDH said "NO it's not SAP." I think it needs to comply with the regulations. It's a public health issue.

Comment: I think we treat reuse and change of use the same – meet the regulations or get a waiver.

Comment: There's another principle: existing systems that are deemed to comply unless there's an overt failure (ponding).

DISCUSSION: EXPANSION

Comment: I think you need to meet the current regulations.

Comment: It's not a property right issue but one of complying with a performance standard.

Comment: I think any new component must meet the current regulations.

Comment: You wouldn't be saying no to anyone who wants to expand (or build). They just have to meet higher performance standards in the current regulations. This is a better public health performance policy.

Comment: This creates a nightmare for the counties. You are allowing anything goes if you're just requiring a PE stamp.

Comment: We have 3 places one can go:

1. pre-engineered
2. pure performance
3. hybrid with guidance

Comment: We'll have to wait until the regulations are written.

DISCUSSION: REPAIRS:

Repairs – government mandate because of non-compliance. It must meet the regulations [as close as possible] or get a "Suit" waiver.

Voluntary Repair (in poor soils) – buyer/seller coming to terms on the property; not government mandated. One must meet the current regulations.

Comment: We drafted a policy on this which said you must put in secondary treatment.

Question: Are we lumping components in this - such as tees being replaced, etc.?

Comment: I'd like to see contractor certification. They could then report component replacement. We need some knowledge that it's not a "jack-leg" repair. It doesn't seem to be a public health issue.

Reuse – trailer swaps, house burned down; it must meet the regulations [as close as possible], or get a "Suit" waiver.

Question: What will we do with all the existing systems that don't meet the future regulations? I don't think this group will be able to tackle this.

Question: What if a trailer burns and the site conditions don't meet the current regulations? How do we handle this? It doesn't have a permit. No records on file.

Comment: I thought we dealt with this. If it was deemed to meet the current regulations, then they could get a waiver.

Comment: I want to draw the line at you must have a septic tank-drainfield system.

Comment: The code authorizes us (safe, adequate, proper) to make a new finding. What rules do we use to make that finding? I think the current regulations must be the standard which is what the Board of Health applied to the whole Commonwealth.

Question: How will this square with certification letters?

Comment: In essence certification letters are irrevocable, so essentially we are still applying the grandfather clause here. You're applying best practice at the time and meet the current regulations to the greatest extent possible.

Comment: Many AOSEs won't touch repairs or waivers because of the liability issues.

Don: I think this (following written on white board) is true for all 5 modes:

1. REPAIRS
2. REUSE
3. EXPANSION
4. CHANGE OF USE
5. VOLUNTARY REPAIR

For a Safe-Adequate-Proper (a new finding by VDH) Request, apply the following test:

1. Does it meet the current (new) regulations?
    a. Yes: Then OK
    b. No: Then system is failing; go to # 2

2. Does it qualify for a waiver?

a. Yes: Then meet the 'old' regulations
b. No: Then upgrade to the current regulations

DISCUSSION: SDMPs and SAND ON SAND SYSTEMS

SDMP

Question: Can we do away with Soil Drainage Management Plans (SDMP)?

Comment: I don't know the absolute answer. There are better ways to do business. It's aggressive management to keep sewage underground with lot size management. How does this fit into the process?

Comment: SDMP would be purely performance.

Don's Comment: My concept is that there'd be a design manual, but we may not want to go there.

Comment: It would fall into a case by case design taking into account hydraulics, water mounding, and nitrates.

Comment: It'll be a sticking point but not a stopping point. Sand on sand is seldom used on the Eastern Shore, and SDMP is used in Chesapeake and Va. Beach.

Don: Once we write a regulation, I want to go out and meet with constituent groups. We'll go to 5-6 sites meet with state agencies, AOSEs, PEs, local government, homebuilders and others. We'll hear everyone out and then revise the regulations.

Question: Does that make sense?

Consensus: Yes, this makes sense.

Question: Will you do two rounds of meetings?

Comment: We don't know. We may have 3-4 rounds. The only reasons I see for opposition are from some manufacturers.

DISCUSSION: GMPs

Don distributed a list of GMPs. Product approvals would go into a manual or referred to in some format by the regulations. 47 of the 104 GMPs will go into this manual. 22 are about another set of regulations. 9 of the GMPs we'll keep, and 8 are internal documents.

We're getting rid of all GMPs relating to AOSEs and 90% of those VDH has been using. The group saw no need to review these further. Most of these policies will go into the regulation.

Question: Will there be GMPs in the future?

Don: Yes. The regulations won't be perfect and policy and guidance will be necessary. We do a lot of policy by regulation and not regulation by policy. People like to whine and complain that we're regulating by policy.

Comment: The complaints come from folks thinking they have no input on policy.

DISCUSSION: MOVING SYSTEMS FROM EXPERIMENTAL/PROVISIONAL TO GENERAL STATUS

Question: How should the TRC review proposals on new technology?

Comment: The applicant has to prove the claim that it's proven technology.

Pre-Engineered	Hybrid	PE 1-off	Universe
*Robust *Proven technology or standard engineering practice with some safety factor. *Some combination of 3rd party and field testing with assessment period. *Must go through the TRC. *Field testing: range & condition (influent, climate)	*This will require some level of VDH review. * 3rd party * design manual necessary		*We may or may not review. * no testing * doesn't have to comply with loading rates in the regulations.

Comment: I think "proven" means similar to some baseline parameter.

Question: How much data must be collected to make it a proven technology?

Comment: I think we need a national standard and a national testing institute; however, these don't exist. We don't invent the standard.

Comment: I would give 3 doors to gain approval: 3) NSF and another approval 2) one party testing 1) no testing;

Comment: The regulations are not a source for engineering concepts.

Comment: Internally, we'll be asking where to draw the line in what goes to the TRC.

Comment: Treatment standards, receiving environments, and loading rates will be the core of the regulations.

Question: If a proposal uses sound engineering practice and 3rd party approval and only wants to use an unproven media, should they go through 3 years of testing?

Consensus: No.

Comment: If we have 3rd party and field testing, it should be pre-engineered. If we don't have the data, it should be under hybrid.

Comment: It will take more VDH engineers to do the reviews of these systems.

Comment: While writing a regulation, keep in mind that it should be written in a format that is easily read and understandable.

Don's comment: There should be an explanation of each section changed or why we couldn't change it. We'll be very transparent.

This was the last Regulatory Revision Meeting. Don will post a notice on the web site that we are done with these meetings. The Division will begin writing a regulation.